Package ‘Eplot’

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Title Plotting longitudinal series
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Author Eran Raviv
Maintainer Eran Raviv <eeraviv@gmail.com>
Description Aim: Adjust the graphical parameters to create nicer longitudinal series plots. The default set of graphical parameters is very general, and can be improved upon when we are interested in plotting data points observed over time. Functions facilitate plotting those kind of series, univariate plots, bivariate plots (with vertical axis on both left and right hand sides), multivariate plots and plots which allow to examine whether a new observation is ‘unusual’ via construction and visualization of prediction intervals around it.
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Plotting longitudinal series.

Description

The aim is to adjust the graphical parameters to create nicer longitudinal series plots. The default set of graphical parameters is very general, and can be improved upon when we are interested in plotting data points observed over time. Functions facilitate plotting those kind of series, univariate plots, bivariate plots (with vertical axis on both left and right hand sides), multivariate plots and plots which allow to examine whether a new observation is 'unusual' via construction and visualization of prediction intervals around it.

Details

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Version: 1.0
Date: 2014-07-30
License: GPL-2

The idea is to adjust default graphical parameters to create nicer longitudinal series plots. The user have the choice to keep the new set of graphical parameters or to revert to the initial set of graphical parameters. Other functions include multivariate plot, plot with vertical axis on both left and right hand sides, and plot which superimpose prediction intervals from an AR-ARCH model.

Author(s)

Eran Raviv

Maintainer: Eran Raviv
<eeraviv@gmail.com>

Examples

par(mfrow = c(2,1))
out <- FCIplot(rnorm(100),plot=TRUE,k=30)
plott(out,main="The out-of-sample standard deviation")
Description

Estimate and plot prediction standard deviation. Given the series, the function estimate point prediction based on AR(1) model and, using the residuals from this simple model, estimate an ARCH model to estimate the prediction standard deviation. If `plott=TRUE`, a plot of the most recent \( k \) values is created.

Usage

```r
fciplot(series, plott = TRUE, wind1 = 24, wind2 = 60, k = 60,
         rrr1 = "Rec", rrr2 = "Rec", main = "series")
```

Arguments

- `series`: series to be plotted.
- `plott`: should a plot be created? default is `plott=TRUE`.
- `wind1`: window size for the AR component (see details).
- `wind2`: window size for the ARCH component (see details).
- `k`: if `plott=TRUE`, `tail(series, k)` will be plotted.
- `rrr1`: will the AR model be estimated using Recursive ("Rec") or Rolling ("Rol") window?
- `rrr2`: will the ARCH model be estimated using Recursive ("Rec") or Rolling ("Rol") window?
- `main`: main title of the plot, same as in `plot.default`.

Details

Estimate and plot prediction confidence intervals based on AR-ARCH model.

Value

vector of prediction’s standard deviation.

Examples

```r
par(mfrow = c(2,1))
out <- fciplot(rnorm(100),plott=TRUE,k=30)
plot(out,main="The out-of-sample standard deviation")
```
Description

Creates a lagged matrix with the desired number of lags.

Usage

lagmat(x, lags)

Arguments

x
the series to be lagged

lags
number of lags desired

Value

matrix with dimension \([\text{NROW}(x), \text{length}(\text{lags})]\)

Examples

\[
\begin{align*}
x &= \text{rnorm}(100) \\
lx &\leftarrow \text{lagmat}(x, 2) \\
tail(lx) \\
tail(x)
\end{align*}
\]

Description

Provides linear regression based predictions from a \(y\sim x\) type model using recursive or rolling regression.

Usage

linpred(y, x, h = 1, wind = NULL, rr = c("rec"))

Arguments

y
a series to be predicted

x
a numeric or matrix of explanatory variables

h
The horizon for which you would like to have the prediction for (see details)

wind
the size of the rolling window or the initial training period if recursive is used

rr
recursive or rolling window? Possible values are \(\text{c"Rec", "Rol"})
Details

The training is done using the direct method: \( y_{1:(t+h-1)} = \beta x_{1:(t-1)} + \epsilon_{1:(t+h-1)} \) and the forecast is made at time \((t+h)\) as \( \hat{y}_{t+h} = \hat{\beta} x_t \).

Value

vector of prediction values with the same dimension as the original series. The first wind values are NA's

Examples

```r
x = rnorm(100)
lx <- lagmat(x, 2)
tail(lx)
tail(x)
out <- linpred(x, lx)
plott(x, return.to.default=FALSE)
plott(out, add=TRUE, col=2)
```

Description

Multivariate plot.

Usage

```r
mplott(x, wherelegend = "bottomleft", textlegend = colnames(x), main = "", return.to.default = T, ...)
```

Arguments

- `x` a matrix to be plotted
- `wherelegend` where to place the legend
- `textlegend` what should the legend read (see details).
- `main` main title of the plot, same as in `plot.default`.
- `return.to.default` for reverting back to previous par settings. Default is `return.to.default=TRUE`
- `...` more graphical parameters can be given as arguments.

Details

Multivariate plot. Limited to 5 series. Legend is added automatically using `colnames(x).`
plott

Value
called for its side effect.

See Also
par, plot.default.

Description
Plotting longitudinal series.

Usage
plott(x, y = c(1:length(x)), add = FALSE, pch = 19, xlab = "",
    col = 1, main = NULL, ty = "b", return.to.default = TRUE, ...)

Arguments
  x            series to be plotted.
y            possible second series, if provided a scatter plot is created.
  add          if add = TRUE the series is added to existing active device. The active device
     graphical parameters must match, meaning it must be created using return.to.default=F.
pch          same as in par.
xlab         a label for the x axis, same as in plot.default.
main         main title of the plot, same as in plot.default.
col          Color of the series, same as in par.
ty          character indicating the type of plotting, any of the types as in plot.default.
return.to.default
              for reverting back to previous par settings. Default is return.to.default=TRUE.
...          more graphical parameters can be given as arguments.

Details
Sets default parameters to get a nicer figure. If y is given then a scatter plot is created. y can also
be of class Date. If add=TRUE, add the series to an existing device. Make a sensible choice as to
which series should be plotted first so that the ylim and xlim cover are sufficient.

Value
Called for its side effect.

See Also
par, plot.default
Description
Create a plot of two series vertical axes on both left and right side.

Usage
tsideplot(series1, series2, main = "", return.to.default = T,
          xaxis = NULL, col = "red", ...)

Arguments
series1, series2
   First and second series to be plotted.
main
   main title of the plot, same as in plot.default.
return.to.default
   for reverting back to previous par settings.
xaxis
   Optional, the xaxis to be used, see details.
col
   Color of the second series, same as in par.
...
   more graphical parameters can be given as arguments.

Details
Create a plot of two series with y-axes on both left and right side. Set return.to.default=TRUE
to keep the new settings, otherwise default to revert to previous par values. xaxis parameter is the
optional xaxis, if not provided then if(is.null(xaxis)) {xaxis = c(1:length(series1))} is used.

Value
Called for its side effect.

See Also
par, plot.default.
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